

IV. *An Account of the Carlsbad Mineral Waters in Bohemia: In a Letter to the Right Honourable the Earl of Macclesfield, President of the R. S. by the Rev. Jeremiah Milles, D.D. F.R.S.*

My Lord,

Read Jan. 20, 1757. **M**R. Watfon having favoured the

Society with an Account of Dr. Sprengsfeld's treatise on the Carlsbad waters, I have taken the liberty to submit to your Lordship some observations on the same subject, which I made during my stay in that place; together with some specimens of different sorts of incrustations, which are formed by those waters.

Carlsbad is a small town, situated on the confines of Bohemia, at the distance of 14 German, or 28 French, leagues west of Prague. It is remarkable for its warm mineral springs, which are said to have been accidentally discovered, in the year 1370, by the Emperor Charles the IVth, as he was hunting; from whom they received their present name of Carlsbad, or Charles's bath. These waters soon growing into repute, occasioned the building of a small neat town, consisting chiefly of houses calculated for the accommodation of the company, who frequent this place in the summer time. There are two warm springs, which rise in the middle of the town, very near each other: and tho' they are supposed to be of the same

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quality, yet, as one is much warmer, it is thought likewise to be more efficacious, than the other. The former of these, called the Brudel, rises very near the bed of the small river Tepel, which runs thro' the middle of the town, and is sometimes overflowed by it. The water issues with great force from the bottom of this spring, rising in a considerable body to the height of six feet perpendicular; and would force itself much higher, if it were confined within a narrower compass. The spring is inclosed with a square wall, within which are fixed three wooden pipes, which convey the water from the bottom of the spring into a reservoir; which distributes it into a number of small troughs, communicating with the several bathing-houses, which are built on both sides of the river for the use of the patients. This spring is so impetuous, that they are obliged to pave and ramm the bed of the river, lest it should force itself up in the channel: and I observed one place on the river side, where it had burst thro' the rock; and they had been obliged to confine it, by fastening down a large stone on the orifice.

The water of this spring is so hot, that you cannot bear your hand in it; and the inhabitants make use of it for scalding their pigs and their poultry.

The water, when put into a glass, has a bluish cast, not unlike that of an opal: and tho' I could not discover, that in 24 hours it had deposited the least sediment, yet there was a thin whitish scum collected on the surface; and I observed the same in the baths, where it was much thicker; and was of the colour, and almost of the consistence, of a wafer.

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It has a salt taste when first taken from the water, and is made use of by the inhabitants for cleaning of teeth and scouring silver: it is called Baden Flaum.

Tho' this water does not deposit any sediment, yet it is remarkable for the speedy and strong incrustation of all bodies, which are put into it. Little plaister figures are sold here, on purpose to verify the experiment; which, tho' perfectly white when put into the spring, are, in eight-and-forty hours, entirely covered with a yellow incrustation. The same effect is observed on the pipes and channels, thro' which the water is conveyed. If care were not taken to clean them four or five times a year, they would be intirely choaked up; and in some parts, where it has not been necessary to clean them so often, I have seen them covered with an incrustation two inches thick. In surrounding and covering these wooden pipes, they do not change the nature of the wood; but it is observable, that they add great hardness and solidity to it: so that it is affirmed a piece of deal will last a hundred years in this water. The head spring is cleared out once in 30 or 40 years, with a very great expence: at which time they are obliged to break off all the stony incrustation, which had been made by the water since the last cleaning; and if neglected would (as it has sometimes actually done) choak the passages, and oblige the spring to find vent in some other place. The incrustations formed by these waters are of different kinds: that, which is made in the troughs and pipes, thro' which the water is conveyed after it comes above ground, is of a light sandy nature, of a loose contexture, and a

bright yellow. It is used by the inhabitants as a gentle corrosive for eating off proud flesh. There is another of a darker colour, and a much harder nature, which is found at the very mouth of the spring, where it bursts out of the rock. There are other sorts taken out of the subterraneous cavities of the spring at the time it was cleaned. In what manner they are formed, is not so easy to determine; unless there were an opportunity of observing in what manner and direction they lie within the spring. They seem to be an alabastrine spar, and are beautifully marked with strait veins of different colours, which may be supposed to have received their tinge from the different colour of the spring-water at the time when this sediment, or rather scum, was formed upon it. They find pieces of this kind most beautifully variegated; and some of them large enough, by fineering, to make tables: these polish very well, and are not much inferior to jasper in appearance. It is a part of the manufacture of the place, to work this sort of stone into snuff-boxes, cane-heads, and sleeve-buttons.

There is likewise another sort of incrustation different from all these, which was found some years ago, in digging for the foundations of the new parish-church, which is about 300 yards distant from the Brudel spring. They found there the same kind of water; but it did not rise with so great force as in the other spring: and they discovered in the cavities large masses of a stony concretion, which were a sort of pisolithi, most of them in a globular, but some in an oval form, from the smallest size to the bigness of a nutmeg; the former sort lying in masses, the latter generally single and detached: they are perfectly

perfectly white, hard, and smooth, and appear to consist of a great number of lamellæ formed round a small nucleus. This sort of incrustation has been found in no other place; but there are some of a browner sort, and more irregular shapes, which are taken out of the Brudel.

The medicinal virtues of these waters have been treated of by German authors. They are esteemed to be particularly efficacious in removing obstructions, and in cases of the stone and gravel; of which the treatise lately produced to the Society contains many remarkable proofs. They are much frequented in these and in other cases; so that they have generally 200 persons in a season drinking the waters. The season begins in May, and ends in August. They drink them in the following method. They begin with a purge; and assist its operation with ten or twelve chocolate-cups of the water, taken within five minutes of each other. The day following they take the waters in the same quantity, and at the same intervals, keeping themselves all the time in a warm room; which, with the warmth of the waters, occasions a most plentiful perspiration. This is repeated for seven or eight days, increasing daily two or three cups of the water, till they come to drink 25 or 30 cups a day. The operation continues from eight of the clock in the morning till noon. Some bleed once in the middle of the course, others not at all. After they have finished this course of drinking, they bathe two days successively, continuing in the bath half an hour, or longer, as their strength permits them, or their case requires. This is the whole course; which is repeated two or three times,

times, or oftener, as they find necessary. The whole is concluded with a gentle purge, tho' the waters themselves are of a laxative nature.

There is another spring in the town of the same nature, but not so warm, as the Brudel: it is called the Mill-spring, and is only tepid. Those of a warm or weak constitution make use of this instead of the other, both for drinking and bathing.

There are likewise several chalybeat springs in the neighbourhood of Carlsbad; one at half a mile, and the other at two leagues distance from the town. Both of them seem to resemble the water of the Pohun spring at Spa; but are not near so strong. They do not use them medicinally on the spot; but they are brought to Carlsbad, and sold, in order to be drank with their wine. I am,

My Lord,

With the greatest respect,

Grosvenor-street,
Jan. 19th, 1757.

Your Lordship's

Most obedient humble Servant,

Jeremiah Milles.

V. *An Essay towards ascertaining the specific Gravity of living Men.* By Mr. John Robertson, F. R. S.

Read Jan. 27, 1757. SOME time last autumn I had occasion to draw up a few examples on the use of a table of the specific gravities and weights of
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